

CLAIMS

1. A method of continuously desalinating water by reverse osmosis, in particular desalinating sea water, wherein

- salt water (10) is introduced under a first pressure (p1) by means of a delivery pump (1) into a pressure compensating device (2),

- salt water (11) is continuously introduced from the pressure compensating device (2) at a second increased pressure (p2) into a membrane module (3) and separated therein by means of a membrane (6) into desalinated water (12) and concentrated salt water (13), and

- the concentrated salt water (13) discharged from the membrane module (3) is continuously introduced under approximately the second pressure (p2) into the pressure compensating device (2) and used there for acting with approximately the second pressure (p2) on the salt water (10) introduced into the pressure compensating device (2) and for introducing the salt water (11) into the membrane module (3),

characterised in that a continuous flow of the salt water (11) introduced into the membrane module (3) is maintained over the surface of the membrane (6) by means of salt water discharged from a reservoir (15; 403, 20).

2. A method according to claim 1 characterised in that the pressure compensating device (2) has two piston/cylinder devices (401, 402) which operate in opposite phase relationship and which each have a respective piston (301, 302), and that the reservoir (15; 403; 20) passes water from the reservoir (15; 403; 20) into the membrane module (3) upon a change in the direction of movement of the pistons (301, 302).

3. A method according to claim 1 or claim 2 characterised in that the pressure for discharging the water from the reservoir (15; 403; 20) is produced by a combination of the approximately second pressure (p2) of the concentrated salt water (13) discharged from the membrane module (3) and an assisting pressure from a pressure reservoir (20).

4. Apparatus for continuously desalinating water by reverse osmosis, in particular for desalinating sea water, comprising

- a delivery pump (1) for introducing salt water (10) under a first pressure ( $p_1$ ) into a pressure compensating device (2),

- a membrane module (3) for separating introduced salt water (11) into desalinated water (12) and concentrated salt water (13), and

- a pressure compensating device (2) for continuously feeding the salt water (11) under a second increased pressure ( $p_2$ ) into the membrane module (3) and for discharging the concentrated salt water (13),

characterised by a reservoir (15; 403, 20) for maintaining a continuous flow of the salt water (11) introduced into the membrane module (3) over the surface of the membrane (6) by the discharge of water from the reservoir (15; 403; 20) into the membrane module (3).

5. Apparatus according to claim 4 characterised in that the pressure compensating device (2) has two piston/cylinder devices (401, 402) operating in opposite phase relationship and each having a respective piston (301, 302) and that the reservoir (15; 403; 20) passes water out of the reservoir (15; 403; 20) into the membrane module (3) upon a change in the direction of movement of the pistons (301, 302).

6. Apparatus according to claim 4 or claim 5 characterised in that the reservoir (15; 403; 20) has a piston reservoir (403) with a piston (303), wherein at the piston front side it has an inlet chamber (203) connected to the salt water outlet of the pressure compensating device (2) and the salt water inlet of the membrane module (3) and at the piston rear side it has an outlet chamber (103) connected to the outlet of the concentrated salt water (13) of the membrane module (3) and a pressure chamber (503) connected to a pressure reservoir (20), and that the surface area ratios of the piston rear side and the pressure of the pressure reservoir (20) are so set that at predetermined moments in time a pressure is produced in the

inlet chamber (203), which is greater than the second pressure ( $p_2$ ) of the salt water (11) discharged from the pressure compensating device (2).

7. Apparatus according to claim 6 characterised in that the piston (303) is of such a configuration that the pressure obtaining in the pressure chamber (503) can act on approximately a quarter of the area of the piston rear side and the pressure obtaining in the outlet chamber (103) can act approximately on three quarters of the area of the piston rear side.

8. Apparatus according to claim 6 or claim 7 characterised in that the pressure reservoir (20) has a pressure which is at least double the second pressure ( $p_2$ ).